AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A device for optical spectrum analysis by Brillouin Scattering, the device comprising:

an optical source ~~(1)~~,

an optical fiber link ~~(2)~~,

an optical circulator ~~(4) to~~ that accesses said optical fiber link ~~(2)~~ by ~~one of its ends~~ a first end of said optical fiber link,

~~a second~~ an optical access ~~(6),~~ that comprises an optical isolator,

a polarization controller arranged between said optical circulator and said optical fiber link,

a detection system, ~~(3)~~ and

a control system ~~(7)~~, ~~where~~ wherein:

said optical fiber link ~~(2) is susceptible to receiving~~ receives ~~by means of said optical circulator (4)~~ an optical probe signal ~~(A) coming~~ from said optical source via said optical circulator ~~(1)~~ and~~, by means of said second access (6),~~ an optical test signal ~~(B)~~, whose spectrum ~~(12)~~ is to be measured~~, coming~~ from an external source via said optical access ~~(10)~~,

said probe signal is input into said optical fiber link at said first end of said optical fiber link,

said test signal is input into said optical fiber link at a second end of said optical fiber link that is opposite to said first end of said optical fiber link,

~~the~~ said optical fiber link ~~(2) providing~~ is a material ~~means~~ that is suitable for a Brillouin effect interaction between the probe signal ~~(A)~~ and the test signal ~~(B)~~,

~~obtaining by said optical circulator (4)~~ an optical output signal obtained by said optical circulator ~~(C), which~~ is carried to said detection system ~~(3)~~, and an electric signal derived from said detection system is applied to said control system, ~~(7) providing~~ and

the device provides a spectral component measurement of the test signal ~~(B) according to~~ based on a ~~the~~ wavelength of the probe signal ~~(A)~~ and ~~obtaining~~ obtains a ~~the~~ spectrum ~~(12)~~ of the test signal ~~by means of said control system (7), characterized in that the input of the test signal (B) in the optical fiber link is carried out through the optical access (6) and at the end opposite to the input of the probe signal (A), said access having an optical isolator (6) inserted so as to prevent any optical signal output which could influence the external source (10), and in that said device comprises a polarization controller (5) located between said optical circulator (4) and said fiber link (2) so as to prevent the loss in efficiency caused by the different polarizations of the optical probe signal (A) and optical test signal (B)~~.

2. (currently amended): A device according to claim 1, ~~characterized in that~~ wherein said optical source is ~~of the~~ a high coherence, narrowband, tunable, and external cavity semiconductor laser ~~type~~.

3. (currently amended): A device according to ~~the previous claims~~ claim 1, ~~characterized in that~~ wherein said device ~~incorporates~~ further comprises an optical amplifier ~~(8) located~~ arranged at ~~the~~ an outlet of said tunable optical source ~~(1) in order to increase the applied intensity of the probe signal (A) and thus the sensitivity level of the measurement~~.

4. (currently amended): A device according to ~~the previous claims~~ claim 1, ~~characterized in that~~ wherein said device ~~incorporates~~ further comprises ~~at least~~ a first modulator ~~(9, 14)~~ that works synchronously ~~working~~ with the detection system ~~(3), such that said spectrometry device reaches a high sensitivity and a broad dynamic range in the measurement~~.

5. (currently amended): A device according to claim 4, ~~characterized in that it incorporates~~ wherein the ~~a~~ first modulator ~~(9) located~~ is arranged between the polarization ~~control (5)~~ controller and the fiber link ~~(2)~~, ~~such that the modulation is carried~~ and the first modulator carries out modulation ~~out~~ on the probe signal ~~(A)~~.

6. (currently amended): A device according to claim 5, ~~4, characterized in that it incorporates~~ further comprising a second modulator ~~(14) located~~ arranged between the fiber link ~~(2)~~ and the isolator ~~(6)~~, wherein the second modulator carries out modulation ~~such that the modulation is carried out~~ on the test signal ~~(B)~~.

7. (currently amended): A device according to claim 4, ~~characterized in that it incorporates a~~ wherein the first modulator ~~(9) located~~ is arranged between the polarization ~~control (5)~~

controller and the fiber link ~~(2)~~, and a second modulator ~~(14) located~~ is arranged between the fiber link ~~(2)~~ and the isolator ~~(6)~~.

8. (currently amended): A device according to claim 7, ~~1, characterized in that~~ wherein at least one of the first modulator and the second modulator ~~the modulators (9, 14) can carry~~ carries out an amplitude or a polarization modulation.

9. (currently amended): A device according to claim 8, ~~characterized in that~~ wherein the first modulator carries out a polarization modulation.

10. (currently amended): A device according to claim 1, ~~characterized in that~~ wherein a ~~said~~ spectral resolution is limited by ~~the~~ a Stimulated Brillouin effect spectral width.

11. (currently amended): A device according to claim 10, ~~characterized in that~~ wherein said spectral resolution reaches a minimum value of about 0.05 pm ~~for the near infrared area, that is,~~ ~~λ =~~ at a wavelength of approximately 1.5 μm.

12. (currently amended): A device according to claim 1, ~~characterized in that said~~ wherein a sensitivity reaches a value of about 1nW/pm for response times in ~~the~~ a detection chain of ~~about~~ approximately 1 ms.

13. (currently amended): A device according to claim 1, ~~characterized in that the~~ wherein a dynamic range reaches a value of ~~about~~ approximately 80 dB, and a system sensitivity ~~being~~ is adjusted by ~~means of the~~ changing a total gain level in the Brillouin Scattering Amplification.

14. (currently amended): A device according to claim 1, ~~characterized in that~~ wherein the optical fiber ~~(2)~~ is a single-mode fiber ~~for the measurement or~~ throughout a ~~working wavelength~~ range of measurement wavelengths.

15. (currently amended): A device according to claim 1, ~~characterized in that~~ wherein the polarization controller ~~(5) can exercise~~ exercises the functions of a first modulator ~~(9) modulating~~ that modulates the probe signal ~~(A)~~.

16. (currently amended): A device according to claim 1, ~~characterized in that~~ wherein the detection system is a low frequency detection system.

17. (currently amended): A process for optical signal spectroscopic measurement ~~for~~ of the selective optical amplification of signals by Brillouin Scatter, ~~including:~~ the process comprising:

~~a. the introduction of~~ introducing an optical probe signal ~~(A) coming from an optical tunable source (1)~~ into ~~one~~ a first end of an optical fiber ~~(2)~~ link ~~after passing through an optical circulator (4)~~,

~~b.~~ introducing an optical test signal ~~(B)~~ to be analyzed ~~and object of the measurement, coming from an external source (10),~~ into a second end of the optical fiber link

~~(2)~~, wherein the first end of the optical fiber link is opposite to the second end of the optical fiber link,

optimizing a polarization alignment of the probe signal with a polarization alignment of the test signal,

~~c.~~ interacting the probe signal ~~(A) and~~ with the test signal ~~(B)~~ to generate an output signal ~~(C)~~,

routing the probe signal and the output signal by an optical circulator,

~~d.~~ detecting the output signal ~~(C) by means of direct light detection system (3)~~, and

~~e.~~ analyzing and collecting data based on the output signal ~~by means of a control system (7) connected to the tunable optical source (1) and the detection system (3)~~,

~~characterized in that for the interaction between the probe signal (A) and the test signal (B), the following steps occur:~~

~~a. introducing the optical test signal (B), after passing through the optical isolator (6), into the optical fiber (2) through the end opposite to that of the introduction of the probe signal (A),~~

~~b. optimizing the polarization alignment of the probe signal (A) with that of the test signal (B), by means of a polarization controller (5) located between the optical circulator (4) and the input of the probe signal (A) in the optical fiber link (2),~~

~~c. interacting the probe signal (A) and the test signal (B) in the optical fiber link (2), generating an output signal (C), and~~

~~d. separating the probe signal (A) and output signal (C) by means of an optical circulator (4) located in the input end of the probe signal (A) in the optical fiber link (2)~~.

18. (currently amended): A measurement process according to claim 17, ~~characterized in that it comprises a~~ further comprising amplifying the probe signal ~~(A) amplification step by means of an optical amplifier (8) after its output from the tunable optical source (1) and~~ before introducing the probe signal ~~(A) input in the optical circulator (4)~~ into the optical fiber link.

19. (currently amended): A measurement process according to ~~claims 17 and 18~~ claim 17 or 18, ~~characterized in that it comprises a~~ further comprising modulating the probe signal ~~(A) modulation step by means of a first modulator (9) located between the polarization control (5) and the optical fiber link (2) and synchronously working with the detection system (3)~~.

20. (currently amended): A measurement process according to ~~claims 17 and 18,~~ claim 17 or 18, ~~characterized in that it comprises a~~ further comprising modulating the test signal ~~(B) modulation step by means of a second modulator (14) located between the optical isolator (6) and the optical fiber link (2) synchronously working with the detection system (3)~~.

21. (currently amended): A measurement process according to ~~claims 17 and 18,~~ claim 17 or 18, ~~characterized in that it comprises a~~ further comprising modulating the probe signal ~~(A) modulation step by means of a first modulator (9) located between the polarization control (5) and the optical fiber link (2) and synchronously working with the detection system (3), and a~~ and the test signal ~~(B) modulation step by means of a second modulator (14) located between the~~

~~optical isolator (6) and the optical fiber link and synchronously working with the detection system (3)~~.